

DOCKET NO. 9491-053-27 DIV



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

IN RE APPLICATION OF: ANDREW C. BRAISTED, ET AL. ART UNIT: 1614

SERIAL NO.: 09/854,816

EXAMINER: DELACROIX MUIRHEID, C.

FILING DATE: MAY 15, 2001

FOR: CONSTRAINED HELICAL PEPTIDES AND METHODS OF MAKING SAME

**SUPPLEMENTAL SUBMISSION**

ASSISTANT COMMISSIONER FOR PATENTS  
PO BOX 1450  
ALEXANDRIA, VA 22313-1450

SIR:

Supplementing Applicants' Amendment filed on February 4, 2004, Applicants herewith resubmit an Information Disclosure Statement, which was earlier filed on July 16, 2001. This re-submission of the references identified in the Information Disclosure Statement is responsive to a request made by the Examiner. The Examiner indicated in her last Official Action that the non-U.S. Patent references, which were earlier submitted in the parent application, could not be located.

The Information Disclosure Statement filed in this application on July 16, 2001 was in full compliance with 37 CFR 1.98 (d)(1)(2) and was timely filed. This re-submission of references is made necessary only because the originally filed copies of the references were lost by the U.S. Patent Office. Accordingly, no fee is due with this re-submission of Information Disclosure Statement references. Applicants are re-submitting copies of those references herewith so as to have them properly considered by the Examiner and made of

record in the present application. Entry and consideration are respectfully requested.

**CONCLUSION**

In light of the above, Applicants believe that this application is now in condition for allowance and therefore requests favorable consideration.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephonic interview, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,

PIPER RUDNICK LLP

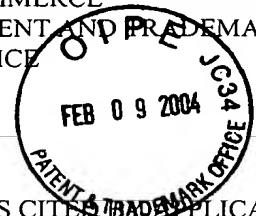


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## U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	AA	5,141,867	08/25/92	Ivanoff, et al.			
	AB	5,440,013	08/08/95	Kahn			
	AC	5,464,933	11/07/95	Bolognesi, et al.			
	AD	5,508,382	04/16/96	Ohsaki, et al.			

## FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	TRANSLATION YES      NO
	AE	WO 89/01943	03/09/89	WIPO	
	AF	WO 91/15238	10/17/91	WIPO	
	AG	WO 91/15512	10/17/91	WIPO	
	AH	WO 92/09625	06/11/92	WIPO	
	AI	WO 94/02505	02/03/94	WIPO	
	AJ	WO 94/03494	2/17/94	WIPO	
	AK	WO 94/16109	07/21/94	WIPO	
	AL	WO 94/29332	12/22/94	WIPO	
	AM	WO 95/31480	11/23/95	WIPO	
	AN	WO 95/34312	12/21/95	WIPO	
	AO	WO 96/19495	06/27/96	WIPO	
	AP	WO 96/20953	07/11/96	WIPO	
	AQ	WO 96/40191	12/19/96	WIPO	
	AR	WO 97/00267	01/03/97	WIPO	
	AS	WO 97/12988	04/10/97	WIPO	

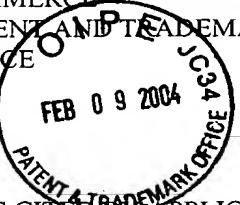
## OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

	AT	Fox, J., BIO/TECHNOLOGY, Vol. 12, page 128 (1994)
	AU	Stein, et al., "Clinical Infectious Diseases," Vol. 17, pp. 749-771 (1993)

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AV	Akke, et al., "Three-Dimensional Solution Structure of Calbindin D <sub>9k</sub> ", Techniques in Protein Chemistry II, Villafranca, J., San Diego: Academic Press, pp. 401-408 (1991)
AW	Atherton, et al., "Solid Phase Peptide Synthesis using N <sub>α</sub> -Fluorenylmethoxycarbonylamino Acid Pentafluorophenyl Esters", J. Chem. Soc. Chem. Commun., pp. 165-166 (1985)
AX	Aue, et al., "Two-dimensional spectroscopy. Application to nuclear magnetic resonance", J. Chem. Phys., Vol. 64, pp. 2229-2246 (1976)
AY	Bax, et al., "MLEV-17-Based Two-Dimensional Homonuclear Magnetization Transfer Spectroscopy", J. Magn. Reson., Vol. 65, pp. 355-360 (1985)
AZ	Berman, et al., "Neutralization of Multiple Laboratory and Clinical Isolates of Human Immunodeficiency Virus Type 1 (HIV-1) by Antisera Raised against gp120 from the MN Isolate of HIV-1", Journal of Virology, Vol. 66, pp. 4464-4469 (1992)
BA	Bernstein, et al., "The Protein Data Bank: A Computer-based Archival File for Macromolecular Structures", J. Mol. Biol., Vol. 112, pp. 535-542 (1977)
BB	Blacklow, et al., "A trimeric subdomain of the Simian Immunodeficiency Virus Envelope Glycoprotein", Biochemistry, Vol. 34, pp. 14955-14962 (1995)
BC	Bodenhausen et al., "Selection of Coherence-Transfer Pathways in NMR Pulse Experiments", J. Magn. Reson., Vol. 58, pp. 370-388 (1984)
BD	Bothner-By, et al., "Structure Determination of a Tetrasaccharide: Transient Nuclear Overhauser Effects in the Rotating Frame", J. Am. Chem. Soc., Vol. 106, pp. 811-813 (1984)
BE	Bracken, et al., "Synthesis and nuclear magnetic resonance structure determination of an $\alpha$ -helical, bicyclic, lactam-bridged hexapeptide", J. Am. Chem. Soc., Vol. 116, pp. 6431-6432 (1994)
BF	Braunschweiler, et al., "Coherence Transfer by Isotropic Mixing: Application to Proton Correlation Spectroscopy", J. Magn. Reson., Vol. 53, pp. 521-528 (1983)
BG	Brown, et al., "Helix-Coil Transition of the Isolated Amino Terminus of Ribonuclease", Biochemistry, Vol. 10, pp. 470-476 (1971)
BH	Bullough, et al., "Structure of influenza haemagglutinin at the pH membrane fusion", Nature, Vol. 371, pp. 37-43 (1994)
BI	Callewaert, et al., "The Disulphide Bridges of Apamin", FEBS Letters, Vol. 1, pp. 111-113 (1968)
BJ	Carr, et al., "A Spring-Loaded Mechanism for the Conformational Change of Influenza Hemagglutinin", Cell, Vol. 73, pp. 823-832 (1993)
BK	Cavanagh, et al., "Suppression of Cross-Relaxation Effects in TOCSY Spectra via a Modified DIPSI-2 Mixing Sequence", J. Magn. Reson., Vol. 96, pp. 670-678 (1992)
BL	Chan, et al., "Core Structure of gp41 from the HIV Envelope Glycoprotein", Cell, Vol. 89, pp. 263-273 (1997)

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BM	Chen, et al., "A Molecular Clasp in the Human Immunodeficiency Virus (HIV) Type 1 TM Protein Determines the Anti-HIV Activity of gp41 Derivatives: Implication for Viral Fusion", Journal of Virology, Vol. 69, pp. 3771-3777 (1995)
BN	Chorev, et al., "Cyclic parathyroid hormone related protein antagonists: Lysine 13 to aspartic acid 17 (i to (i +4)) side chain to side chain lactamization", Biochemistry, Vol. 30, pp. 5968-5974 (1991).
BO	Edelhoch, "Spectroscopic Determination of Tryptophan and Tyrosine in Proteins", Biochemistry, Vol. 6, pp. 1948-1954 (1967).
BP	Fahey, et al., Clin. Exp. Immunology, Vol. 88, pp. 1-5 (1992)
BQ	Fass, et al., "Retrovirus envelope domain at 1.7 angstrom resolution", Nature, Vol. 3, pp. 465-468 (1996)
BR	Fields, et al., "Solid phase peptide synthesis utilizing 9-fluorenylmethoxycarbonyl amino acids", Int. J. Peptide Protein Res., Vol. 35, pp. 161-214 (1990)
BS	Gao, et al., "Molecular Cloning and Analysis of Functional Envelope Genes from Human Immunodeficiency Virus Type I Sequence Subtypes A through G", Journal of Virology, Vol. 70, pp. 1651-1667 (1996)
BT	Habermann, et al., "Zur Biochemie der Bienengiftpeptide Melittin und Apamin", Biochemische Zeitschrift, Vol. 343, pp. 192-203 (1965)
BU	Haigwood, et al., "Native but Not Denatured Recombinant Human Immunodeficiency Virus Type 1 gp120 Generates Broad-Spectrum Neutralizing Antibodies in Baboons", Journal of Virology, Vol. 66, pp. 172-182 (1992)
BV	Harper, et al., "Helix Stop Signals in Proteins and Peptides: The Capping Box", Biochemistry, Vol. 32, pp. 7605-7609 (1993)
BW	Haynes, et al., "Conversion of an immunogenic human immunodeficiency virus (HIV) envelope synthetic peptide to a tolerogen in chimpanzees by the fusogenic domain of HIV gp41 envelope protein", Journal of Experimental Medicine, Vol. 177, pp. 717-727 (1993)
BX	Houston Jr., et al., "Lactam bridge stabilization of $\alpha$ -helical peptides: ring size, orientation and positional effects", J. Peptide Science, Vol. 1, pp. 274-282 (1995)
BY	Jackson, et al., "General approach to the synthesis of short $\alpha$ -helical peptides", J. Am. Chem. Soc., Vol. 113, pp. 9391-9392 (1991)
BZ	Jiang, et al., "HIV-1 inhibition by a peptide", Nature, Vol. 365, p. 113 (1993)
CA	Jiang, et al., "Inhibition of HIV-1 Infection by a Fusion Domain Binding Peptide from the HIV-1 Envelope Glycoprotein GP41", Biochemical and Biophysical Research Communications, Vol. 195, pp. 533-538 (1993)
CB	Johnson Jr., et al., "Circular Dichroism of Polypeptide Solutions in the Vacuum Ultraviolet", J. Am. Chem. Soc., Vol. 94, pp. 4389-4390 (1972)
CC	Kaiser, et al., "Color Test for Detection of Free Terminal Amino Groups in the Solid-Phase Synthesis of Peptides", Analytical Biochemistry, Vol. 34, pp. 595-598 (1970)

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	CD	Kumar et al., "A Two-Dimensional Nuclear Overhauser Enhancement (2D NOE) Experiment for the Elucidation of Complete Proton-Proton Cross-Relaxation Networks in Biological Macromolecules", Biochem. & Biophys. Res. Comm., Vol. 95, pp. 1-6 (1980)	
	CE	Lawless, et al., "HIV-1 Membrane Fusion Mechanism: Structural Studies of the Interactions between Biologically-Active Peptides from gp41", Biochemistry, Vol. 35, pp. 13697-13708 (1996)	
	CE	Lu, et al., "A trimeric structural domain of the HIV-1 transmembrane glycoprotein", Nature, Vol. 2, No. 12, pp. 1075-1082 (1995)	
	CG	Lupas, et al., "Predicting Coiled Coils from Protein Sequences", Science, Vol. 252, pp. 1162-1164 (1991)	
	CH	Lyu, et al., "α-Helix stabilization by natural and unnatural amino acids with alkyl side chains", Proc. Natl. Acad. Sci. USA, Vol. 88, p. 5317-5320 (1991)	
	CI	Marion, et al., "Application of Phase Sensitive Two-Dimensional Correlated Spectroscopy (COSY) for Measurements of <sup>1</sup> H- <sup>1</sup> H Spin-Spin Coupling Constants in Proteins", Biochem. & Biophys. Res. Comm., Vol. 113, pp. 967-974 (1983)	
	CJ	Marqusee, et al., "Usually stable helix formation in short alanine-based peptides", Proc. Natl. Acad. Sci. USA, Vol. 86, pp. 5286-5290 (1989)	
	CK	Merrifield, R.B., "Solid Phase Peptide Synthesis. I. The Synthesis of a Tetrapeptide", J. Am. Chem. Soc., Vol. 85, pp. 2149-2154 (1963)	
	CL	Osapay, et al., "Multicyclic polypeptide model compounds. 1. Synthesis of a trycyclic amphiphilic α-helical peptide using an oxime resin, segment-condensation approach", J. Am. Chem. Soc., Vol. 112, pp. 6046-6051 (1990)	
	CM	Osapay, et al., "Multicyclic polypeptide model compounds. 2. Synthesis and conformational properties of a highly α-helical uncospapeptide constrained by three side-chain to side-chain lactam bridges", J. Am. Chem. Soc., Vol. 114, pp. 6966-6973 (1992)	
	CN	Phelan, et al., "A General Method for Constraining Short Peptides to an α-Helical Conformation", J. Am. Chem. Soc., Vol. 119, pp. 455-460 (1997)	
	CO	Rabenstein, et al., "HIV-1 gp41 Tertiary Structure Studied by EPR Spectroscopy" Biochemistry, Vol. 35, pp. 13922-13928 (1996)	
	CP	Rance, "Improved Techniques for Homonuclear Rotating-Frame and Isotropic Mixing Experiments", J. Magn. Reson., Vol. 74, pp. 557-564 (1987)	
	CQ	Ravi, et al., "Cyclic peptide disulfides. Solution and Solid-State Conformation of Boc-Cys-Pro-Aib-Cys-NHMe, a Disulfide-Bridged Peptide Helix", J. Am. Chem. Soc., Vol. 105, pp. 105-109 (1983)	
	CR	Salmon-Ceron, et al., "Safety and Immunogenicity of a Recombinant HIV Type 1 Glycoprotein 160 Boosted by a V3 Synthetic Peptide in HIV-Negative Volunteers", Aids Res. And Human Retroviruses, Vol. 11, pp. 1479-1486 (1995)	
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	CS	Schollkopf et al., "Enantioselective Synthesis of (R)-Amino Acids Using L-Valine as Chiral Agent", Angew. Chem. Int. Ed. Engl., Vol. 20, pp. 798-799 (1981)		
	CT	Shipolini, et al., "The Structure of Apamin", Chem. Commun., pp. 679-680 (1967)		
	CU	Shugars, et al., "Biophysical Characterization of Recombinant Proteins Expressing the Leucine Zipper-Like Domain of the Human Immunodeficiency Virus Type 1 Transmembrane Protein gp41", Journal of Virology, Vol. 70, pp. 2982-2991 (1996)		
	CV	Skelton, et al., "Determination of the Solution Structure of the Peptide Hormone Guanylin: Observation of a Novel Form of Topological Stereoisomerism", Biochemistry, Vol. 33, pp. 13581-13592 (1994)		
	CW	Weiner, et al., "An All Atom Force Field for Simulations of Proteins and Nucleic Acids", J. Comp. Chem., Vol. 7, pp. 230-252 (1986)		
	CX	Weiner, et al., "A New Force Field for Molecular Mechanical Simulation of Nucleic Acids and Proteins", J. Am. Chem. Soc., Vol. 106, pp. 765-784 (1984)		
	CY	Wild, et al., "Peptides corresponding to a predictive $\alpha$ -helical domain of human immunodeficiency virus type 1 gp41 are potent inhibitors of virus infection", Proc. Natl. Sci. USA, Vol. 91, pp. 9770-9774 (1994)		
	CZ	Wild et al., "Propensity for a leucine zipper-like domain of human immunodeficiency virus type 1 gp41 to form oligomers correlates with a role in virus-induced fusion rather than assembly of the glycoprotein complex", Proc. Natl. Acad. Sci., USA, Vol. 91, pp. 12676-12680 (1994)		
	DA	Wild et al., "A synthetic peptide inhibitor of human immunodeficiency virus replication: Correlation between solution structure and viral inhibition", Proc. Natl. Acad. Sci. USA, Vol. 89, pp. 10537-10541 (1992)		
	DB	Zhang et al., "HIV-1 subtype and second-receptor use", Nature, Vol. 383, p 768 (1996)		
	DC	Zhang et al., "Synthetic CD4 exocyclics inhibit binding of human immunodeficiency virus type 1 envelope to CD4 and virus replication in T lymphocytes", Nature Biotechnology, Vol. 15, No. 2, pp. 150-154 (1997)		
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